

CLAIMS

1. An X-ray CT apparatus for generating a tomographic image by reconstructing projection data acquired by scanning a predetermined slice of a subject, characterized by comprising detecting means for detecting a static cardiac time phase with a small amount of motion artifacts in a predetermined portion of the subject based on heartbeat information acquired in association with the projection data, and image reconstructing means for generating the tomographic image by reconstructing projection data corresponding to the static cardiac time phase detected by the detecting means.

2. An X-ray CT apparatus according to claim 1, characterized in that the detecting means detects the static cardiac time phase based on correlation data between the heartbeat information and the static cardiac time phase that are previously determined to each subject.

3. An X-ray CT apparatus according to claim 2, characterized in that the correlation data is prepared to each of different portions of the subject, and the detecting means comprises input means for setting the predetermined portions.

4. An X-ray CT apparatus according to claim 2, characterized in that the correlation data includes at least a correlation between a heartbeat rate and a static cardiac time phase.

5. An X-ray CT apparatus according to claim 2, characterized by comprising memory means for storing the projection data acquired over a plurality of heart beat cycles and a projection data synthesizing means for reading the projection data corresponding to the static cardiac time phase detected by the detecting means and synthesizing the projection data, wherein the image reconstructing means reconstructs the projection data synthesized by the projection data synthesizing means.

6. An X-ray CT apparatus according to claim 1, characterized in that the detecting means comprises sample tomographic image rearranging means for generating a plurality of sample tomographic images having a different cardiac time phase based on the projection data and the heartbeat information and selecting means for selecting a sample tomographic image with a small amount of motion artifacts from the plurality of sample tomographic images, wherein the image reconstructing means generates the

tomographic image by reconstructing projection data corresponding to the cardiac time phase of the sample tomographic image selected by the selecting means.

7. An X-ray CT apparatus according to claim 6, characterized in that an image size of the sample tomographic image is set smaller than that of the tomographic image.

8. An X-ray CT apparatus according to claim 7, characterized that the selecting means calculates an integrated value of a CT value of each of the plurality of sample tomographic images in a predetermined region and selects a sample tomographic image with a smallest fluctuation of the integrated value of the CT value.

9. An X-ray CT apparatus according to claim 7, characterized in that the selecting means determines a correlation between sample tomographic images having adjacent cardiac time phases of the plurality of tomographic images having the different cardiac time phase and selects a sample tomographic image having a largest correlation.

10. An X-ray CT apparatus according to claim 7, characterized in that the selecting means calculates an

integrated value of a CT value of each of the plurality of sample tomographic images having the different cardiac time phase in a predetermined region, determines a difference between the integrated values of the CT values of sample tomographic images having adjacent cardiac time phases, and selects a sample tomographic image having a smallest difference.

11. An X-ray CT apparatus according to claim 7, characterized by comprising memory means for storing the projection data acquired over a plurality of heart beat cycles and projection data synthesizing means for reading the projection data corresponding to the cardiac time phase of the sample tomographic image selected by the selecting means and synthesizing the projection data, wherein the image reconstructing means reconstructs the projection data synthesized by the projection data synthesizing means.

12. An X-ray CT apparatus according to claim 7, characterized in that the sample tomographic image generating means generates the plurality of sample tomographic images in a predetermined cardiac time phase range determined based on the correlation data between the heartbeat information and the static cardiac time phase that are determined previously.

13. An X-ray CT apparatus according to claim 12, characterized in that the correlation data is prepared to each of different portions of the subject, and the detecting means comprises input means for setting the predetermined portions.

14. An X-ray CT apparatus according to claim 12, characterized in that the correlation data includes at least a correlation between a heart rate and a static cardiac time phase.

15. An X-ray CT imaging method of generating a tomographic image by reconstructing projection data acquired by scanning a predetermined slice of a subject, characterized in that a static cardiac time phase with a small amount of motion artifacts is detected in a predetermined portion of the subject based on heartbeat information acquired in association with the projection data, and the tomographic image is generated by reconstructing projection data corresponding to the detected static cardiac time phase.

16. An X-ray CT imaging method according to claim 15, characterized in that correlation data between the heartbeat

information and the cardiac time phase is previously acquired to each subject, and the static cardiac time phase is detected based on the correlation data.

17. An X-ray CT imaging method according to claim 15, characterized in that a plurality of sample tomographic images having a different cardiac time phase are generated based on the projection data and the heartbeat information, a sample tomographic image with a small amount of motion artifacts is selected from the plurality of sample tomographic images, and a cardiac time phase corresponding to the selected sample tomographic image is used as a static cardiac time phase.

18. An X-ray CT imaging method according to claim 17, characterized in that an image size of the sample tomographic image is set smaller than that of the tomographic image.

19. An X-ray CT imaging method according to claim 15, characterized in that correlation data between the heartbeat information and the static cardiac time phase is previously acquired to each subject, and the plurality of sample images are generated in a predetermined cardiac time phase range determined based on the correlation data.